

ADAD5003 – Research in context

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Film & Tv

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Immersive VR – Why is sound so important in VR to make an immersive experience?

3. Choose a theme, movement, or selection of artists or designers that relate to your practice or interests. Critically assess primary themes, key writers, and relevant practitioners.

Introduction

This essay will be discussing and analysing a selection of VR content and the techniques used in direct relation to the sound including ambisonic audio and how these techniques can affect the experience and immersion for an audience within VR. To do this, sequences will be looked at, focusing on the sound in that sequence, identifying the techniques and theories used to convey its experience and the connection to the visuals. I will analyse the work of artist Bjork in terms of her music connection to the visual, giving the music a new feeling of meaning as well as ambisonic sound in Zoom labs, Mexican dancer video (ZoomSoundLab, 2018), in terms of its use to enhance an audience's experience and improve the emotional connection to the product. The conclusion will summarise the points and themes made in this essay and discuss the importance of sound in VR content when it comes to enhancing the experiences and immersion to create a sense of realism within Bjork and ZoomSound Labs content.

Bjork

Visuals

The Icelandic pop art, experimental, electronica singer Bjork uses emerging and immersive technologies to enhance her work and produce a new style of music video. Some of the technologies Bjork uses are chroma key, projection, visual arts as well as 360-degree video and VR. Bjork is most well known for her technology-based music videos such as mutual core (Bjork, 2019) in which she uses a movable sandpit and CGI to show the human connection to the earth and how our emotions are linked to natural phenomena like volcanos.

As well as Stonemilker (Bjork, 2015) in which she sings on the secluded Icelandic beaches creating a sense of loneliness and isolation. The use of VR's "major appeal - is its immersive user experience" (Visvizi and Lytras, 2019, p.g. 196), which is used by Bjork to take the viewer to the places. The beach in which the song is brought to life setting the scene and an overall tone of the piece. By using a 360-degree video a sense of being there physically yourself is created as you follow her around the scene as she sings to you bringing a sense of realism.

This does two things. It first creates intimacy between yourself and Bjork as she walks around you and points at you linking her actions to the music she is singing. Her actions of interacting around as well as pointing and other gestures produce a personal connection as she addresses you. Within the context of the written word, Persuasive devices like personal address have been shown to make a person “consider their personal interaction” and “is being asked to consider their own behaviour,” (Engage Wiki, 2014).

This secondly shows you the isolation and loneliness of your surroundings of which Bjork herself has “never really understood the word ‘loneliness’. As far as I was concerned, I was in an orgy with the sky and the ocean, and with nature.” (Bjork, Goodreads). As you are no longer seeing the beach as a lonely place it gives the song a more uplifting meaning and an sense of solitude. This helps the listener relax as if “Solitude is the soul’s holiday.” (Katrina Kenison) a way to break free and set aside problems for a short while.

Often as humans, we have created a bad thought around solitude and often “considered an inconvenience, something to avoid, a punishment, a realm of loners.” (Crane, 2017). Although often seen as a bad thing, California State Polytechnic University has found solitude is one of the best ways to find the toxic elements of one's surroundings and give a person clarity.

“VR is a way to escape the real world into something more fantastic.” (Chris Milk, 2016), the technology has made this escape and our own pocket of solitude even more accessible in our busy lives. By bringing the listener the visual experience of the beach through Bjork's eyes, she produces a whole new emotion of freedom as she says “moments of clarity are rare” yet you get to share one of those rare moments with her. This allows for a deeper connection to the song as it is experienced.

Sound

Although Bjork uses VR to let a viewer look around the scene she has opted to use a mono audio signal which may disconnect some viewers from the experience. I feel she has opted to do this to keep clarity in the song rather than make her music video fully immersive and interactive. Although the extra clarity is nice and helps to construct a high quality experience, “Some people experience motion sickness in VR, which means when they put on a headset and enter a virtual world they feel dizzy or nauseous” (‘Motion Sickness in VR, Sophie Thomas, 2020). This discomfort may distract from the video in some cases. Discomfort when viewing the video may also be caused by the lack of surrounding sounds such as the sea lapping on the shore and the sound of Bjork walking on the stones. This disconnection is one of the downsides to Bjork's otherwise well done work.

Ambisonic Audio

Ambisonic audio is a form of audio that creates a complete soundscape around a person that allows you to mimic the placement of sound when one turns their head. By using this format of audio recording you are able to further immerse a person in the world you are trying to create and avoid problems that are found within VR today such as VR motion sickness as previously mentioned and disorientation. Where as with the mono and binaural audio solutions we currently use the audio is fixed to the person's head. When a person turns their head in these forms of audio recording the audio follows them and the sound they hear does not change leaving the audio sounding flat and 2D.

“when we listen to sound, when we're hearing it we're surrounded by it we know we're surrounded by it so the idea of an Ambisonic recording is that it enables you to hear sound from all around you” this means that when a person is in a VR world “turns their head you can rotate the sound field so ... this makes them far more realistic” (Pual Hodges, 'Into The Soundfield', 2018)

Ambisonic audio recording is the process of using a “ multi capsule microphone ... arranged in a cluster in order to maintain face coherence and directional markers based on the pickup pattern and angle of the capsules in relation to each other.” (John Escobar, 2018). Once placed together this produces a full soundscape that can be used to place a person in a space not only visually but also Auditory for an immersive experience.

Ambisonic audio allows storytellers and creatives alike to produce 360 degree audio soundscapes that follow a wearers head as they turn. Cortney Harding once said “You can’t put a 360 camera in the middle of the stage and expect it to be compelling” (VRLA Dives Into Virtual Reality Audio. Pro Sound News, 2017, vol. 39, pg 30). This is why Ambisonic audio is so important. It brings the visuals and audio together to produce a compelling and immersive piece that makes a viewer feel they are there themselves. This is shown well in “The Zoom H3-VR” experience (ZoomSoundLab, 2018), as it brings a viewer into a part of the world they are unlikely to have visited for a unique experience that feels almost lifelike.

Zoom Sound Labs - Mexican Dance Ambisonics

Zoom Sound Lab have developed a series of 360 degree test experiences to allow the consumers to experience ambisonic audio using a VR headset at home. One of the stronger pieces Zoom Sound Labs has produced is a 360 degree experience in which you are placed in the center of a traditional mexicon tribes music circle while they play their tribes music. This experience not only provides you with the exposure of hearing the tribe's music but see their traditional dress over looking the canyons below and get a cultural insight that the majority of people would not be able to partake in, in their lifetime. The use of VR and ambisonic audio has now enabled this unique experience to be enjoyed from home making it more accessible to the general public and those with disabilities that would prevent travel.

When viewing the mexicon dancer video you are able to focus on the areas of the audio you want to hear like in real life by turning your head while also experiencing how the other instruments work together to build the powerful feeling of the music.

The immersive environment of the recording allows you to feel the rhythmic timings and the marching discipline feel of the music due to the beating of drums, reminding me of war. As the army had to "very quickly adopt any new techniques that could give the army an edge on the battlefield, including tools that could help in secondary ways" (History of drums) the drum was seen as a great tool for this as it could be used for music as well as communication of large messages to trained soldiers.

On the other hand isolating just the visuals gives the one off piece two main emotional themes one of which is the sense of a happy carnival celebration and the feeling of joy, excitement and happiness, as if it was Día de los Muertos the festival celebrating the day of the dead. where as the views beyond the musicians create a sense of solitude and tranquility and a connection to nature that gives the music a new life. The nature surrounding them further emphasizes the point of it being a tribal song as tribal guarachero is often heard within tribes for a variety of purposes from celebration to loss. Pairing the audio of a rhythmic march and the visuals of the traditional dress and placing the musicians and dancers on a cliff top with mountains towering over head makes the piece feel more realistic and mellows out the disciplined nature of the piece but without the visual audio pairing three very different stories and emotions are created.

In terms of the immersion of the piece zoom has created a highly immersive music experience that produces the feeling of being on the cliff top surrounded by the musicians and mimicking the audio in a realistic way that does not break the immersion or detach the viewer from the experience.

”well you should be playing music, you should be doing music

because it it gives you something, it gives something back to you. you feel some emotion to it or it takes you somewhere” (Rode, 2020) The same is true for Ambisonic audio and VR. If not used to take a viewer to a new place or somewhere they are not currently at then there is no point in using it as it gains no value. When turning your head whilst in the VR world the sound changes depending on the way you are facing like you would if you were there physically yourself. This is done through tracking the ears in a 3d scape and playing back accurate levels and audio dynamics. This produces a more natural feeling experience over other audio methods such as binaural recording. However although this is the case many people are opposed to using ambisonic audio due to the large file sizes and the lack of education surrounding its uses and its impact meaning many people do not grasp the concept. this there for stunts it's development

Conclusion

Through the assignment I have tried to demonstrate the impact of VR and Ambisonic sound and how it is necessary to understand in order to improve the immersion, emotion as well as the experience of the viewer. The main point covered throughout this essay has been the importance of using Ambisonic audio to improve the realism within a VR world “forging of an immediate and necessary relationship between something one sees and something one hears at the same time” (Chion, 1994, p224).

By forging the relationship between the visuals and an accurate soundscape that surrounds a viewer the ability to fully immerse a user in the world is made easier as the sound is more realistic. This was shown though Zoom Labs mexicon dance video as it illustrated how when audio is recorded accurately and as close to normal human hearing as possible you can trick the mind into thinking that you are physically there in oppose to Bjork's use of mono audio tracks that leave some viewer feeling disconnected.

The Idea of Emotion through these technologies was also discussed through the use of Bjork's music video Stonemilker in which personal address is used to connect with a viewer subconsciously making them “consider their own behaviour,” (Engage Wiki, 2014). Also providing a place of calm and clarity and connection with Bjork. Ambisonics are also paired with VR to create an emotion environment around the viewer in Zoom Labs video, Creating feelings of Joy, excitement and enlightenment around the idea of providing an experience that most people will never be able to have physically.

Finally the idea of experiences is heavily discussed in both a positive and negative way between Bjork and Zoom Sound Labs. Bjork brought both positive and negative experiences for some viewers with her music video for stonemilker. She provided personal address and beautiful views of the icelandic beach that brought the viewer into her world well, however her use of a mono track recording did let her down in terms of the experience of the video as it can disorientate and disconnect some viewers. Some viewers may even experience VR sickness from it as the audio is fixed to the head and does not change as they turn their head.

Zoom Sound Labs on the other hand avoid this through the use of ambisonic audio to provide an immersive and enlightening experience without the problems Bjork had. By using Ambisonic audio as a viewer turned their head the audio would change and adapt depending on which way they are facing. This provides a better experience over Bjork and prevents problems such as VR sickness and disconnection from the experience. As well as this Zoom Labs also provided an opportunity and experience of hearing and seeing the tribe play their native music where they live, something most people will never get to do physically as well as bringing these experiences to those less able, making opportunities like this more accessible. This highlights the importance of Ambisonic audio to produce immersive experiences that connect with viewers on an emotional level that can avoid common problems in the current generation of VR such as VR sickness for the future developments within this technology.

Bibliography

‘A Quote by Björk’. n.d. Accessed 20 November 2020.

<https://www.goodreads.com/quotes/473550-i-never-really-understood-the-word-loneliness-as-far-as>.

‘Ambisonics’. 2015. *Hooke Audio* (blog). 17 June 2015.

<https://hookeaudio.com/blog/equipment/what-is-ambisonics-recording/>.

‘An Introduction to Ambisonics | Creative Field Recording’. n.d.

Accessed 27 November 2020.

<https://www.creativefieldrecording.com/2017/03/01/explorers-of-ambisonics-introduction/>.

Berklee Online. 2018. *What Are Ambisonics? | 360° | VR | Spatial Audio Recording | Microphone | Berklee Online | Part 2/7*.

<https://www.youtube.com/watch?v=-d1uT4QEA9k&t=17s>.

Bjork. 2015. *Björk: Stonemilker (360 Degree Virtual Reality)*.

<https://www.youtube.com/watch?v=gQEyezu7G20>.

björk. 2019. *Björk : Mutual Core*.

<https://www.youtube.com/watch?v=-WnzRqCK6Fs>.

Chion, Michel, Claudia Gorbman, and Walter Murch. 1994. *Audio-Vision:*

Sound on Screen. New York: Columbia University Press.

Crane, Brent. 2017. 'Being Alone Can Be Good for Your Mental Health'. The Atlantic. 30 March 2017.

<https://www.theatlantic.com/health/archive/2017/03/the-virtues-of-isolation/521100/>.

'Day of the Dead (Dia De Los Muertos)'. n.d. Day of the Dead. Accessed 29 November 2020. <https://dayofthedead.holiday/>.

Devine, Richard. 2020. *Richard Devine: Recording For The Ambisonic Sound Library With The SoundField by RØDE NT-SF1*.

<https://www.youtube.com/watch?v=V9bpd3XARLc>.

'Direct Address'. 2014. *The Engage Wiki* (blog). 6 May 2014.

<http://wiki.engageeducation.org.au/english/language-analysis/persuasive-techniques-2/direct-address-2/>.

'FEATURE: Tribal Guarachero: Mexican Teens & Aztec History'. n.d. The FADER. Accessed 30 November 2020.

<https://www.thefader.com/2010/10/13/feature-in-tribal-guarachero-teenage-wilders-rebirth-aztec-history>.

Hak5. 2019. *Zoom Ambisonics Player: Overview*.

<https://www.youtube.com/watch?v=kIquru2hAH4>.

Hervey, Steve. 2017. 'VRLA Dives Into Virtual Reality Audio'. *Pro Sound News* 39 (June): 29–31.

‘History of Military Drums - Use of Drums in Military and Wars’. n.d.

Accessed 30 November 2020.

<http://www.historyofdrums.net/drum-history/military-drums/>.

‘Indigenous Mexican Tribes’. n.d. Accessed 30 November 2020.

<https://www.facts-about-mexico.com/mexican-tribes.html>.

Oxford, university of. 2018. ‘Into The Soundfield’ – Michael Gerzon & Ambisonics at Oxford (Official Documentary 2018).

<https://www.youtube.com/watch?v=X23hZNoSkUs>.

Rosedale, Philip. 2016. ‘VR Will Allow Us to Live in Another World of Our Own Design’. *Wired UK*, 18 November 2016.

<https://www.wired.co.uk/article/vr-live-in-our-own-designed-world>
[S](#).

‘Solitude’. 2015. Katrina Kenison. 1 August 2015.

<https://www.katrinakenison.com/2015/08/01/solitude/>.

Thomas, sophie. 2020. ‘Motion Sickness in VR: Why It Happens and How to Minimise It’. 2020.

<https://virtualspeech.com/blog/motion-sickness-vr>.

‘Top 10 Virtual Reality Quotes | Liquona.Com’. 2016. *Liquona* (blog). 28 September 2016.

<https://www.liquona.com/blog/top-10-virtual-reality-quotes/>.

Visvizi, Anna, and Miltiadis D. Lytras. 2019. *Research & Innovation Forum 2019: Technology, Innovation, Education, and Their Social Impact*. Springer Nature.

ZoomSoundLab. 2018. *The Zoom H3-VR (360 Video / 4K)*.
<https://www.youtube.com/watch?v=CLP-qyvNRSw>.